WHAT IS CLAIMED IS:

1.   A method for determining moving compensation (MC) mode, comprising:

(a) receiving as inputs a forward frame sum of absolute difference (SAD), a sum of a forward top field SAD and a forward bottom field SAD, a backward frame SAD, and a sum of a backward top field SAD and a backward bottom field SAD;

(b) identifying a minimum value of the inputs received in step (a);

(c) if the minimum value is smaller than a predetermined threshold value, selecting an MC mode corresponding to the minimum value; and

(d) if the minimum value is not smaller than the predetermined threshold value, selecting one of an interpolative field MC mode and an interpolative frame MC mode.

2.   The method of claim 1, wherein step (c) comprises:

if the minimum value is a forward frame SAD and is smaller than the predetermined threshold value, selecting a forward frame MC mode, and if the minimum value is the sum of the forward top field SAD and the forward bottom field SAD and is smaller than the predetermined threshold value, selecting a forward field MC mode.

3.   The method of claim 1, wherein step (c) comprises:

if the minimum value is the backward frame SAD and is smaller than the predetermined threshold value, selecting a backward frame MC mode, and if the minimum value is the sum of the backward top field SAD and the backward bottom field SAD and is smaller than the predetermined threshold value, selecting a backward field MC mode.

4.   The method of claim 1, wherein step (d) comprises:

if the minimum value is not smaller than the predetermined threshold value and the sum of the forward frame SAD and the backward frame SAD is smaller than the sum of the forward frame SAD, the forward top field SAD, the forward bottom field SAD, the backward frame SAD, the backward top field SAD, the backward bottom field SAD, and a predetermined OFFSET, outputting the interpolative frame MC mode, and if the minimum value is not smaller than the predetermined threshold value and the sum of the forward frame SAD and the backward frame SAD is not smaller than the sum of the forward frame SAD, the forward top field SAD, the forward bottom field SAD, the backward frame SAD, the backward top field SAD, the backward bottom field SAD, and the predetermined OFFSET, selecting the interpolative field MC mode.

5. The method of claim 1, wherein in step (d), one of the interpolative frame MC mode and the interpolative field MC mode is selected according to a predetermined condition made by combination of SADs.

6. An apparatus for determining an MC mode, comprising:

a SAD receiving unit which receives as inputs a forward frame SAD, a sum of a forward top field SAD and a forward bottom field SAD, a backward frame SAD, and a sum of a backward top field SAD and a backward bottom field SAD;

a minimum value judgment unit which identifies a minimum value of the inputs received by the SAD receiving unit;

a first selection unit which selects an MC mode corresponding to the minimum value if the minimum value is smaller than a predetermined threshold value; and

a second selection unit which, if the minimum value is not smaller than the predetermined threshold value, selects one of an interpolative field MC mode and an interpolative frame MC mode.

7. The apparatus of claim 6, wherein if the minimum value is the forward frame SAD and is smaller than the predetermined threshold value, the first selection unit selects a forward frame MC mode, and if the minimum

value is the sum of the forward top field SAD and the forward bottom field SAD and is smaller than the predetermined threshold value, the first selection unit selects a forward field MC mode.

8.   The apparatus of claim 6, wherein if the minimum value is the backward frame SAD and is smaller than the predetermined threshold value, the first selection unit selects a backward frame MC mode, and if the minimum value is the sum of the backward top field SAD and the backward bottom field SAD and is smaller than the predetermined threshold value, the first selection unit selects a backward field MC mode.

9.   The apparatus of claim 6, wherein if the minimum value is not smaller than the predetermined threshold value and the sum of the forward frame SAD and the backward frame SAD is smaller than the sum of the forward frame SAD, the forward top field SAD, the forward bottom field SAD, the backward frame SAD, the backward top field SAD, the backward bottom field SAD, and a predetermined OFFSET, the second selection unit outputs an interpolative frame MC mode, and if the minimum value is not smaller than the predetermined threshold value and the sum of the forward frame SAD and the backward frame SAD is not smaller than the sum of the forward frame SAD, the forward top field SAD, the forward bottom field SAD, the backward frame SAD, the backward top field SAD, the backward bottom field SAD, and

the predetermined OFFSET, the second selection unit outputs an interpolative field MC mode.

10. The apparatus of claim 6, wherein the second selection unit selects one of the interpolative frame MC mode and the interpolative field MC mode according to a predetermined condition made by combination of SADs.

11. A picture encoding apparatus comprising:

a forward SAD calculation unit which calculates a forward frame SAD, a forward top field SAD, and a forward bottom field SAD;

a backward SAD calculation unit which calculates a backward frame SAD, a backward top field SAD, and a backward bottom field SAD; and

an MC mode determination unit which receives the SADs as inputs.

12. The apparatus of claim 11, wherein the MC mode determination unit comprises:

a SAD receiving unit which receives as inputs the forward frame SAD, a sum of the forward top field SAD and the forward bottom field SAD, the backward frame SAD, and a sum of the backward top field SAD and the backward bottom field SAD;

a minimum value judgment unit which identifies a minimum value among the inputs received by the SAD receiving unit;

a first selection unit which selects an MC mode corresponding to the minimum value if the minimum value is smaller than a predetermined threshold value; and

a second selection unit which, if the minimum value is not smaller than the predetermined threshold value, selects one of an interpolative field MC mode and an interpolative frame MC mode.

13. A computer readable medium recording a program for executing a method of determining an MC mode in a general-purpose computer, the method comprising:

(a) receiving as inputs a forward frame sum of absolute difference (SAD), a sum of a forward top field SAD and a forward bottom field SAD, a backward frame SAD, and a sum of a backward top field SAD and a backward bottom field SAD;

(b) identifying a minimum value of the inputs received in step (a);

(c) if the minimum value is smaller than a predetermined threshold value, selecting an MC mode corresponding to the minimum value; and

(d) if the minimum value is not smaller than the predetermined threshold value, selecting one of an interpolative field MC mode and an

interpolative frame MC mode.